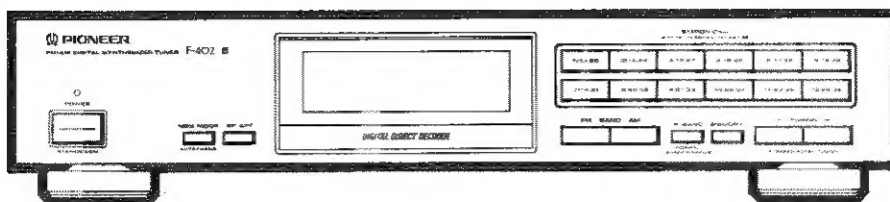


Operating Instructions

FM/AM DIGITAL SYNTHESIZER TUNER

F-402



Thank you for buying this Pioneer product.

Please read through these operating instructions so you will know how to operate your model properly. After you have finished reading the instructions, put them away in a safe place for future reference.

In some countries or regions, the shape of the power plug and power outlet may sometimes differ from that shown in the explanatory drawings. However, the method of connecting and operating the unit is the same.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

LINE VOLTAGE SELECTOR SWITCH

Only multi-voltage models are provided with this switch. U.K. models are not provided with this switch.

Main voltages in Saudi Arabia are 127 V and 220 V only.

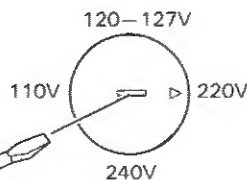
Never use this model with a 110 V setting in Saudi Arabia.

The line voltage selector switch is on the rear panel. Before your model is shipped from the factory, this switch is set to the power requirements of the destination. Check that it is set properly before plugging the power cord into the AC wall socket. If the voltage is not properly set or if you move to an area where the voltage requirements differ, adjust the selector switch as follows.

1. Use a medium-size screwdriver.
2. Insert the screwdriver into the groove on the voltage selector, and adjust so that the tip of the arrow points to the voltage value of your area.

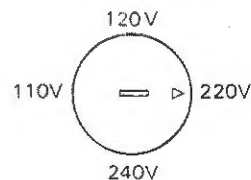
Set the voltage selector for the voltage in your area.

<Flat blade 2-pin AC plug model>



Medium-size screwdriver

<Round 2-pin AC plug model>



PIONEER
The Art of Entertainment

Information to User

Alteration or modifications carried out without appropriate authorization may invalidate the user's right to operate the equipment.

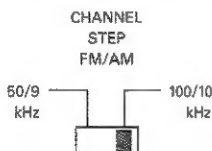
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FM/AM CHANNEL STEP SWITCH

FM/AM CHANNEL STEP switch is located on the rear panel of the digital synthesizer tuner. Before the tuner leaves the factory, this switch is set to the channel allotment plan of the area in which the tuner is sold. When TUNING button is given a single push, the frequency display will change in following unit.



[100 kHz/10 kHz] position:

Set to this position for areas with FM reception step of 100 kHz and AM 10 kHz.

[50 kHz/9 kHz] position:

Set to this position for areas with FM reception step of 50 kHz and AM 9 kHz.

NOTE:

When unsure about the channel allocation for your area, consult your dealer for correct information.

The channel step will not change if CHANNEL STEP switch is operated with the power ON.

After operating CHANNEL STEP switch, if you turn POWER switch OFF and then ON again, the channel step will switch over. If you operate CHANNEL STEP switch, the stations that were memorized before the switch was operated will be erased.

INSTALLATION

LOCATION

Install the unit in a well-ventilated location where it will not be exposed to high temperature or humidity.

Do not install the unit in a location which is exposed to direct sunlight, or near hot appliances or radiators. Excessive heat can adversely affect the cabinet and internal components. Installation of the unit in a damp or dusty environment may result in malfunction or accident. (Also, avoid installation near cookers, etc., where the unit may be exposed to smoke from oil, steam or heat.)



CONDENSATION

When this unit is brought into a warm room from previously cold surroundings or when the room temperature rises sharply, condensation may form inside, and the unit may not be able to attain its full performance. If this occurs, allow the unit to stand for about an hour or raise the room temperature gradually.

POWER-CORD CAUTION

Handle the power cord by the plug. Do not pull out the plug by tugging the cord and never touch the power cord when your hands are wet as this could cause a short circuit or electric shock. Do not place the unit, a piece of furniture, etc., on the power cord, or pinch the cord. Never make a knot in the cord or tie it with other cords. The power cords should be routed such that they are not likely to be stepped on. A damaged power cord can cause fire or give you an electrical shock. Check the power cord once in a while. When you find it damaged, ask your nearest PIONEER authorized service center or your dealer for a replacement.

MAINTENANCE OF EXTERNAL SURFACES

- Use a polishing cloth or dry cloth to wipe off dust and dirt.
- When the surfaces are very dirty, wipe with a soft cloth dipped in some neutral cleanser diluted five or six times with water and wrung out well, then wipe again with a dry cloth. Do not use furniture wax or cleaners.
- Never use thinners, benzene, insecticide sprays and other chemicals on or near this unit, since these will corrode the surfaces.

FEATURES

- FM IF bandwidth switchable between "normal" and "super narrow" for FM.
- D.D.D. (Digital Direct Decoder), for a high SN ratio.
- A built-in attenuator (RF ATT) can be switched on or off for proper reception of strong broadcast stations.

- **Random 36-stations Presetting**

A total of 36 FM and AM stations can be preset into the memory circuit.

- Even the slightest deterioration of sound quality is avoided by the thorough use of anti-vibration parts.

- Honeycomb chassis.
- Large insulator.
- All parts are carefully selected to achieve high sound quality.

CHECKING OUT THE ACCESSORIES

① AM loop antenna



② FM T-type antenna



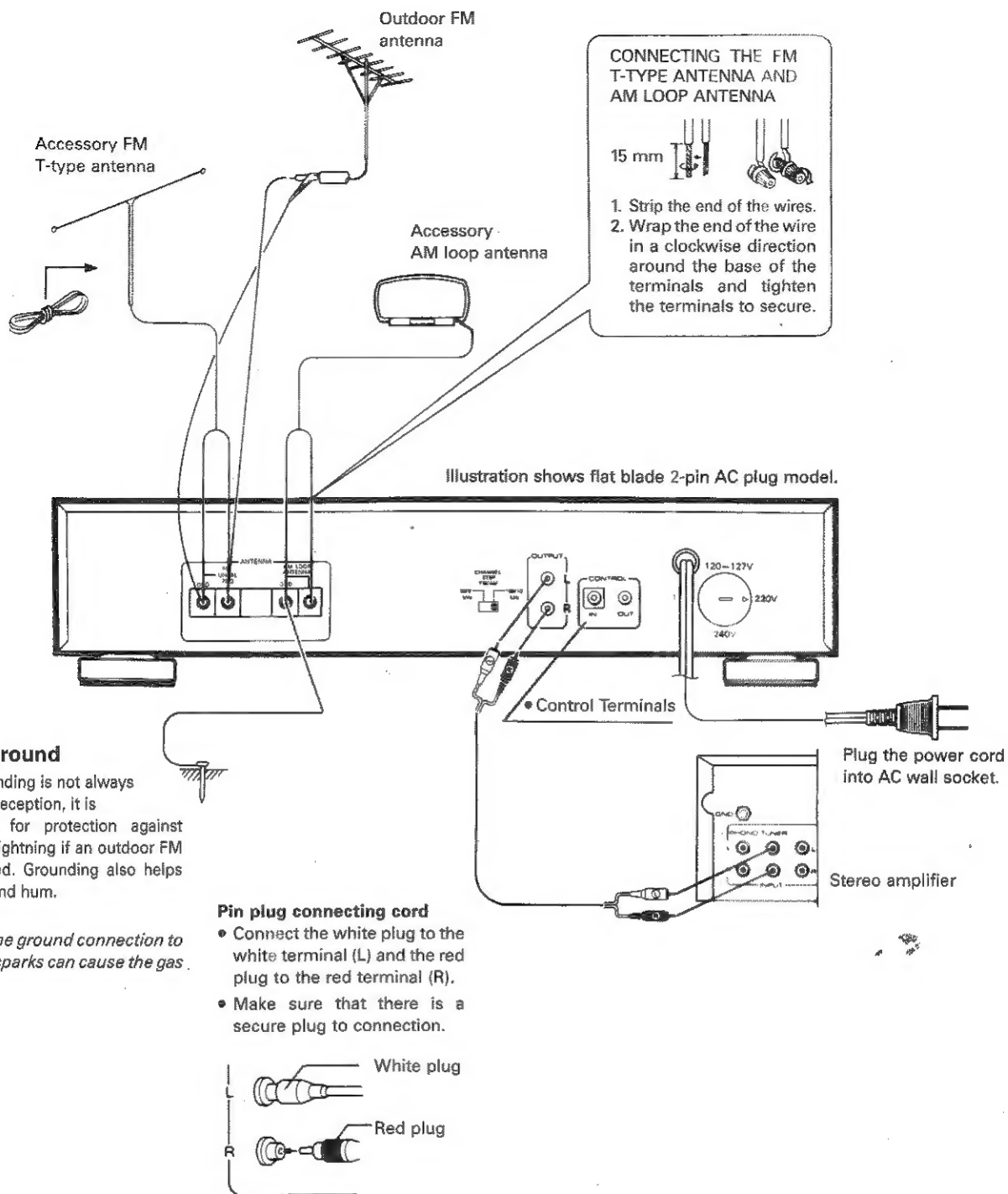
③ Connecting cord with pin plugs




④ Control cord



CONNECTIONS



•CONTROL terminals

When using together with Pioneer component with  mark, connect the control IN terminal on the rear panel of the tuner to the CONTROL OUT terminal on the component. This will enable the tuner to be controlled from a distance, with the remote control unit supplied with the component.

When this feature is not used, connection is not necessary.

- For instructions regarding connection and operation, please refer to the operating instruction manual of your stereo component.

ANTENNA CONNECTIONS

Radio reception is not possible unless the antenna is properly connected.

The strength of broadcast signals varies from one area to another. Signal reception is especially poor in metropolitan areas, where there are many tall buildings, and also in mountainous areas. Proper antenna installation is vital to good reception.

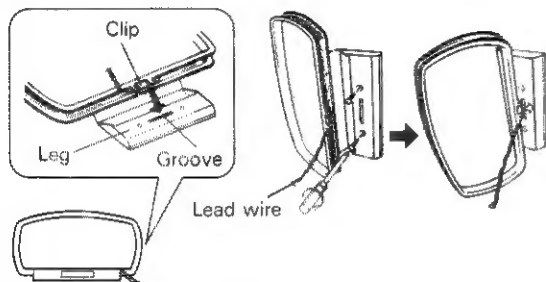
AM ANTENNA

The AM loop antenna supplied with the tuner should be connected to the AM antenna terminals. The antenna should be placed at a distance from the tuner, and should not be allowed to touch metallic objects. Avoid placing it near CD players, personal computers, television sets, and other devices generating radio frequencies.

Setting Up the AM Antenna

- Insert the clip on the bottom of the antenna into the groove on the leg.
- To permanently fix the antenna, screw the leg to a wall or post before assembling (fixing the antenna in the direction that gives the best reception).
- Place the antenna on a level surface and rotate it to locate the orientation that yields the best reception.

AM Loop Antenna Set-up



AM Loop Antenna Connection

The accessory AM loop antenna must be connected to ensure proper reception.



External AM antenna

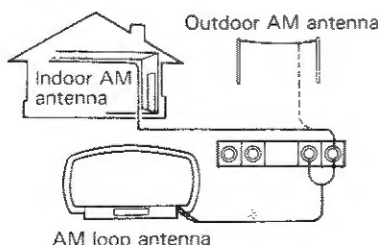
Indoor AM antenna

Provide a vinyl-coated wire (5 to 6 meters long). Secure one end to the AM terminal and the other end to a wall or other high location.

Outdoor AM antenna

If reception is still poor even when a lead antenna has been stretched out indoors, stretch out a vinyl-coated wire and secure it outdoors.

Connecting the external AM antenna



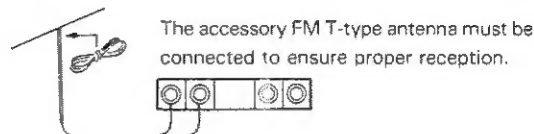
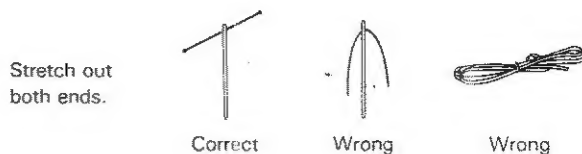
NOTE:

Do not detach the AM loop antenna when using the external AM antenna.

FM ANTENNA

FM T-type Antenna Attachment

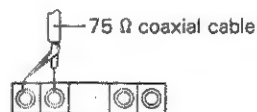
Connect the accessory FM T-type antenna to the FM terminals. Stretch the antenna out to its full length, and affix it to a wall, etc.



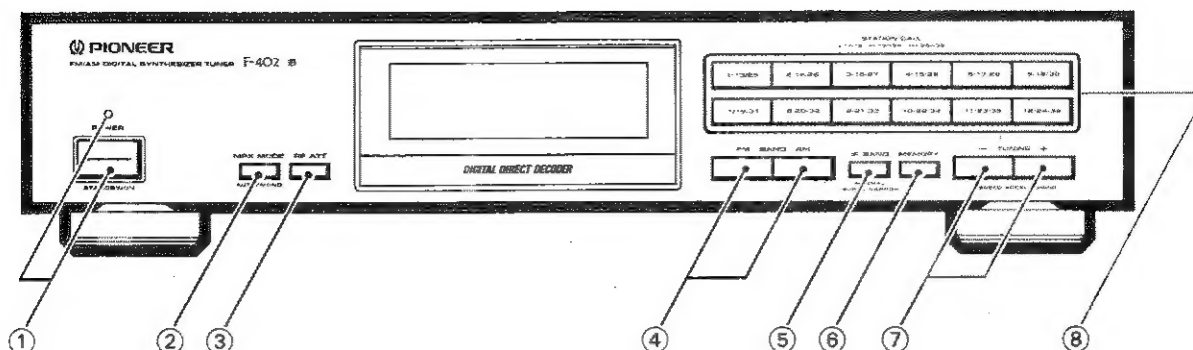
External FM antenna installation

Use an external antenna when the signals from the station are weak and cannot be picked up by the accessory T-type FM antenna, or when the sound heard is accompanied by too much noise. There are two ways of connecting the external FM antenna to the ANTENNA terminals: with 300 Ω feeder wire, or with a 75 Ω coaxial cable. It is recommended that you use the 75 Ω coaxial cable, so that the effects of extraneous noise are reduced to a minimum.

When the connecting cable is a 75 Ω coaxial cable



FRONT PANEL FACILITIES



① POWER (STANDBY/ON) switch/indicator

When the power is on, indicator lights.

ON When set to ON position, power is supplied and the unit becomes operational.

STANDBY ... When set to STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness.

Disconnect the power cord from the power outlet when you do not plan to use the unit for a long period of time.

NOTE:

- The memory will be backed up so long as the power cord is not unplugged.
- If the power cord is unplugged, the memory will be retained for several days.

② MPX (multiplex) MODE (AUTO/MONO) button

Mode changes as follows each time this button is pressed:



This button does not affect AM reception.

AUTO:

Depending on the broadcast station, STEREO or MONO is automatically selected.

AUTO indicator lights up.

NOTE:

When the signal level is too weak for reception, sound output is automatically muted.

MONO:

To receive stereo broadcasts in monaural.

MONO indicator lights up.

NOTE:

This button's status is preset for each station in station memory.

③ RF ATT button

Set this button to on when receiving strong FM signals (nearby stations) to reduce sound distortion ([RF ATT] indicator lights). Normally, this button should be set to off.

NOTE:

This button's status is preset for each station in station memory.

④ BAND (FM/AM) selector buttons

FM:

Press to receive FM broadcasts.

AM:

Press to receive AM broadcasts.

⑤ IF BAND (NORMAL/SUPER NARROW) button

Each time this button is pressed the bandwidth of the IF circuit switches between "normal" and "super narrow" for the FM band. The selected bandwidth is displayed as follows:

The **NORMAL** or **SUPER NARROW** indicator lights up.

Set to SUPER NARROW in case of interference from other stations.

NOTE:

This button's status is preset for each station in station memory.

⑥ MEMORY button

Press to memorize preset stations. The **MEMORY** indicator will remain lit for several seconds. Press the desired STATION CALL buttons to memorize it during this period.

See page 9 for operational details.

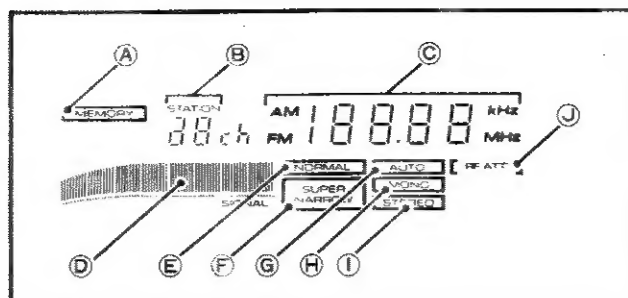
⑦ TUNING + (up)/- (down) buttons

Use these buttons to tune in broadcasting stations. Press + (up) to receive a station whose frequency is higher than the displayed frequency, and - (down) to tune into a lower frequency station.

⑧ STATION CALL buttons

Use these buttons to preset stations and to receive already preset stations.

OPERATING DISPLAY

**A MEMORY indicator**

Lights for several seconds when MEMORY button is pressed.

B STATION indicator

When STATION CALL buttons are pressed, it will show the corresponding channel number.

C Frequency indicator

Shows reception band and frequency.

D SIGNAL indicator**E NORMAL indicator**

Stays lit while IF BAND button is set to NORMAL.

F SUPER NARROW indicator

Stays lit while IF BAND button is set to SUPER NARROW.

G AUTO indicator

Stays lit while MPX MODE button is set to AUTO.

H MONO indicator

Stays lit while MPX MODE button is set to MONO.

I STEREO indicator

Lights up when a stereo broadcast is received.
(The indicator does not light when the MPX MODE button is set to MONO.)

J RF ATT indicator

Stays lit while RF ATT button is on.

LISTENING TO BROADCASTS

LISTENING TO FM OR AM BROADCASTS

1. Turn POWER switch on.

2. Depress the desired BAND selector button.

- For FM broadcasts, the "FM" and "MHz" indicators will light.

FM 106.00 MHz

- For AM broadcasts, the "AM" and "kHz" indicators will light.

AM 1000 kHz

3. Press TUNING + (up)/- (down) buttons.
(3—SPEED ACCEL TUNING)

- **One step tuning**

Press TUNING + (up) or - (down) and release quickly. The frequency will change by one step each time the button is pressed. Press as many times as necessary to tune in the desired station.

Switching the FM/AM CHANNEL STEP switch on the rear panel causes steps to change in the following.

[100 kHz/10 kHz] position FM: 100 kHz, AM: 10 kHz
[50 kHz/9 kHz] position FM: 50 kHz, AM: 9 kHz

- **Auto tuning**

Press TUNING + (up)/- (down) buttons until the frequency starts to change, then release it. The tuner will automatically search for a broadcasting station and stops when one is found. To search for another station, press again.

- **High speed manual tuning**

Keep TUNING + (up) or - (down) pressed. The frequency changes continuously, and stops when the button is released.

4. To receive another station in the same band, repeat step 3. To receive a station in the other band, repeat steps 2 and 3.

5. For FM broadcasts, use IF BAND button to select the IF bandwidth, and for FM broadcasts, use MPX MODE button to select the AUTO or MONO mode, based on reception conditions.

Note on Auto Tuning

- Because of high sensitivity of this unit, it may automatically stop even at very weak overseas stations. The same can happen with aggregate radio noise emitted in cities.
- During reception of an AM broadcast, if it frequently stops when presetting stations with auto tuning, auto tuning of only strong local stations is possible by changing the direction of the loop antenna or folding it down.
After presetting, move the loop antenna back to the position where it is pointing in the best direction as before.
- Preset extremely weak stations with manual tuning.

The Signal Indicator

When no segment of the signal indicator is lit, reception is not possible even if the tuning frequency is correct. This is because the antenna terminal input is too weak. Check whether the antenna cable is firmly connected. If it is, consult your nearest dealer and install an outdoor antenna.

PRESETTING FM AND AM STATIONS

You can preset 12 FM and AM stations in Mode 1, 12 stations in Mode 2, and 12 stations in Mode 3 which has a total of 36 stations.

Mode 1: 1 — 12
Mode 2: 13 — 24
Mode 3: 25 — 36

1. Turn POWER switch on.

2. Use BAND selector buttons to select either FM or AM reception band.

- For FM broadcasts, the "FM" and "MHz" indicators will light.
- For AM broadcasts, the "AM" and "kHz" indicators will light.

3. Tune in the desired station with TUNING + (up)/—(down) buttons.

The present mode selected with IF BAND button, MPX MODE button, and RF ATT button will be memorized together with the station's frequency.

4. Press MEMORY button.

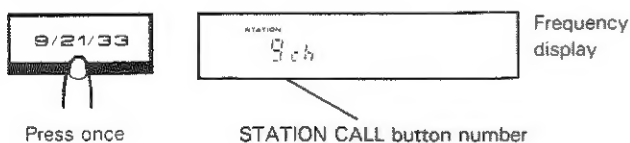
- The **MEMORY** indicator will light for a few seconds.
- Memory storage is not possible once the indicator goes off. In this case, press the MEMORY button again.
- If the button is pressed again with the indicator lit, the memory function will be canceled.

5. While the memory indicator is on, press the desired STATION CALL button.

While the indicator is lit, press the button corresponding to the station that you wish to preset or re-preset.

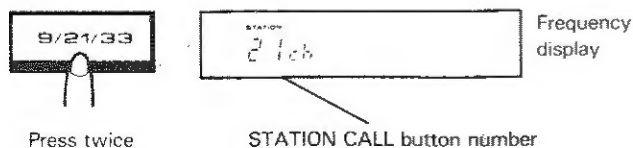
When presetting a station to Mode 1 (e.g. presetting a station to No. 9):

By pressing the STATION CALL button once, the station will be preset to Mode 1.



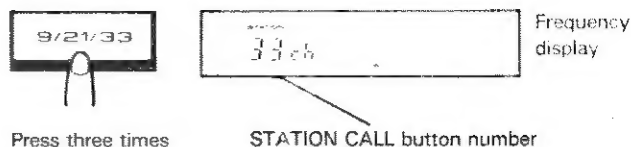
When presetting a station to Mode 2 (e.g. memorizing a station to No. 21):

By pressing the STATION CALL button twice, the station will be preset to Mode 2.



When memorizing a station to Mode 3, (e.g. memorizing a station to No. 33):

By pressing the STATION CALL button three times, the station will be preset to Mode 3.



After you press STATION CALL buttons, the **MEMORY** indicator will flash for a few seconds, then the station will be memorized. If you press any button other than the buttons IF BAND, MPX MODE, and RF ATT while the **MEMORY** indicator is flashing, the station will not be memorized.

- The selected preset channel will be displayed, and the **MEMORY** indicator will go off. This completes the preset procedure.
- Write down the preset station in STATION CALL buttons "Memo" (Page 11) and use it as a reminder.

Notes on Preset

- If a station is memorized with STATION CALL buttons at a position where a station was already memorized, the previous contents are erased and the new data is stored in memory.
- If preset stations get erased, repeat the preset procedures from the beginning.

PRESET STATION TUNING

Press a STATION CALL button into which the desired station has been memorized.

- To listen to a Mode 1 station, press the button once, to listen to one in Mode 2, press it twice, and to listen to one in Mode 3, press it three times.
- By pressing STATION CALL buttons, the button number will be displayed, then the frequency will be displayed.

NOTE:

If, for example, you wish to receive the station memorized in STATION CALL button "13" when listening to the station memorized in button "9", press button "1/13/25" twice.

In this way, simple and accurate reception of any desired station is possible.

NOTE:

- The contents of STATION CALL buttons will be retained for several days, even if the tuner's power cord is unplugged.
- If a preset station has been erased, re-preset it.

Last station memory

- When POWER switch is pressed to turn power on, the last station received before the power was turned off will be received again.
- When the power is on, if one of the BAND selector buttons is pressed, the last station received on that band will be received again.

TROUBLESHOOTING

Incorrect operations are often mistaken for trouble and malfunctions. If you think that there is something wrong with this component, check the points below. Sometimes the trouble may lie in another component. Investigate the other components and electrical appliances being used. If the trouble cannot be rectified even after exercising the checks listed below, ask your nearest PIONEER authorized service center or your dealer to carry out repair work.

Symptom	Cause	Remedy
No power.	<ul style="list-style-type: none"> Has the power cord been disconnected? 	<ul style="list-style-type: none"> Reconnect the power cord.
No sound.	<ul style="list-style-type: none"> Have any of the output cords been disconnected or incorrectly connected? Has the antenna been disconnected or is the connection loose? Was the power cord unplugged for several days? (Station memory has been lost.) 	<ul style="list-style-type: none"> Connect them properly to the TUNER terminals on the amplifier. Connect the antenna properly. Memorize the stations once again.
Noise	<ul style="list-style-type: none"> Is the station properly tuned in to the correct frequency? Has the antenna been disconnected or is the connection loose? 	<ul style="list-style-type: none"> Tune in the station correctly. Connect the antenna properly.
Sound distortion.	<p>[On the FM band]</p> <ul style="list-style-type: none"> The T-type FM antenna has not been extended, or it is not properly orientated. Are the signals weak and reception poor? <p>• Even though the signal is weak, the RF ATT is on.</p> <p>• Static from other appliances (particularly automobiles) or multipath reflection (radio waves reflected off mountains and tall buildings, hence not received directly).</p> <p>[On the AM band]</p> <ul style="list-style-type: none"> Poor positioning of AM loop antenna? The supplied AM loop antenna is in contact with the unit. Are the signals weak and reception poor? Noise from other electrical appliances (fluorescent light/motors). 	<ul style="list-style-type: none"> Extend both ends fully, and face it in the direction giving best reception. Replace the supplied T-type FM antenna for an outdoor antenna. Set the MPX MODE button to MONO. (The broadcast will be received in monaural.) Set the RF ATT to off. Try changing the antenna installation place. If you are using an outdoor antenna, move it away from the street. Change antenna direction, and set it in the position giving best reception. Move the loop antenna away from the unit. Install and connect an external AM antenna and ground the unit. Stop using the noise-generating equipment, or move it away.
FM stereo broadcasts not received in stereo.	<ul style="list-style-type: none"> Antenna input is insufficient because of weak broadcast signals. The unit is not correctly tuned to the frequency of the broadcast station. MPX MODE button is set to MONO. 	<ul style="list-style-type: none"> Use a multi-element FM antenna. Tune in the correct frequency. Set MPX MODE button to AUTO.

Abnormal functioning of this unit may be caused by lightning, static electricity, or other external interference. To restore normal operation, turn the power off and then on again, or unplug the AC power cord and then plug it in again.

SPECIFICATIONS

FM Tuner Section

Frequency range	87.5 MHz to 108 MHz
Usable Sensitivity	
NORMAL	Mono: 12.1 dBf, IHF (1.1 μ V/75 Ω)
50 dB Quieting Sensitivity	
NORMAL	Mono: 16.2 dBf, IHF (1.8 μ V/75 Ω)
	Stereo: 36.2 dBf, IHF (17.7 μ V/75 Ω)
Sensitivity (DIN)	
NORMAL	Mono: 0.9 μ V/75 Ω
	Stereo: 28 μ V/75 Ω
Signal-to-Noise Ratio	Mono: 83 dB (at 80 dBf)
	Stereo: 78 dB (at 80 dBf)
Distortion (at 80 dBf)	
NORMAL	Mono: 0.2 % (1 kHz)
	Stereo: 0.3 % (1 kHz)
Alternate Channel Selectivity	
NORMAL	70 dB (400 kHz)
SUPER NARROW	65 dB (300 kHz)
Stereo Separation	50 dB (1 kHz)
	40 dB (20 Hz to 10 kHz)
Frequency Response	± 1 dB (30 Hz to 15 kHz)
Image Response Ratio	50 dB
IF Response Ratio	90 dB
AM Suppression Ratio	60 dB
Spurious Response Ratio	70 dB
Subcarrier Product Ratio	55 dB
Muting Threshold	23.2 dBf (4 μ V/75 Ω)
Antenna Input	75 Ω unbalanced

AM Tuner Section

Frequency range	531 kHz to 1,602 kHz (Step 9 kHz)
	530 kHz to 1,700 kHz (Step 10 kHz)
Sensitivity (IHF, Loop antenna)	300 μ V/m
Selectivity	30 dB
Signal-to-Noise Ratio	50 dB
Image Response Ratio	40 dB
IF Response Ratio	50 dB
Antenna	Loop Antenna

Audio Section

Output (Level/Impedance)	
FM (100 % MOD)	650 mV/0.9 k Ω
AM (30 % MOD)	150 mV/0.9 k Ω

Miscellaneous

Power Requirements	
<Flat blade 2-pin AC plug model>	
	AC 110/120—127/220/240 V (switchable), 50/60 Hz
<Round 2-pin AC plug model>	
	AC 110/120/220/240 V (switchable), 50/60 Hz
Power Consumption	15 W
Dimensions	420 (W) x 86 (H) x 316 (D) mm
Weight (without package)	3.5 kg

Furnished Parts

FM T-type Antenna	1
AM Loop Antenna	1
Connecting Cord with Pin Plugs	1
Operating Instructions	1
Control cord	1

NOTE:

Specifications and design are subject to possible modifications without notice, due to improvements.

STATION CALL button "memo"

It is recommended that you make a note of the preset stations.

S.C. button	•	1	2	3	4	5	6	7	8	9	10	11	12
Name of broadcast station													
Frequency													
S.C. button	••	13	14	15	16	17	18	19	20	21	22	23	24
Name of broadcast station													
Frequency													
S.C. button	•••	25	26	27	28	29	30	31	32	33	34	35	36
Name of broadcast station													
Frequency													

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